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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •

OCTOBER 29, 1932

Hallowe'en Bird a Good Mousetrap

See Page 277

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SCIENCE NEWS LETTER

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The Weekly Summary of Current Science

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? DO YOU KNOW THAT ?

Malaria takes 2,000,000 lives throughout the world each year.

Chemists have not yet succeeded in producing morphine synthetically.

National forests have been named in honor of Washington, Lincoln, Roosevelt, and Cleveland.

Practically all of Louisiana's area of 28,000,000 acres of land and water is potential territory for oil and gas.

Transparent steel, made of sheets thinner than paper, is proving useful in the manufacture of scientific instruments.

Geraniums grown experimentally in Florida were found to yield oils as fragrant for perfume purposes as those produced abroad.

Spiders do not seem to "know enough" to repair their broken webs, it appears from studies made by a British scientist.

Approximately 48,830,000 men and women, or almost exactly one-half of the population of the country ten years of age and over, are gainfully employed in normal times.

A new speed fuel for outboard motors is being produced.

Canaries and parrots are the only birds that may be kept in confinement in Missouri without a permit.

Although the world produces hundreds of varieties of bananas, only three kinds reach the American market in any quantity.

The native population of Australia has dwindled from about 300,000 in 1788 to 62,000 in 1930, or 80,000 if half-castes are included.

A solar observatory is to be set upon the top of Mt. St. Katherine in the Sinai Desert, possibly the mountain associated with the Ten Commandments.

London motorists are being offered gasoline in the form of bricks of solid petrol, which give off gas for running the engine without ever passing into a liquid state.

Experimental plantings of foreign and native grass seeds are being made by government scientists at five points in northern states, with a view to improving the hay and pasture crops of this section.

WITH THE SCIENCES THIS WEEK

Curiosity arousing questions for the teacher and general reader. Book references in italic type are not sources of information of the article, but are references for further reading. Books cited can be supplied by Librarian, Science Service, at publisher's price, prepaid in U. S.

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What good was "Typhoid Mary" inadvertently the cause of? p. 275.

STATISTICS-PUBLIC HEALTH

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PHYSIOLOGY

Radio Tubes Amplify And Measure Nerve Messages

Using Electrical Connection With Nerve Fibers Scientists Are Learning More About Effects of Different Stimuli

RADIO TUBES and the general mechanism used in modern radio for the amplification of very weak electrical impulses have been exceedingly useful to the physiologist in his laboratory. They have enabled him to learn more about the nature of messages sent along nerve fibers to and from the brain, and thus to push out a little farther the frontier of man's knowledge about himself.

This point was developed in a radio talk by Prof. D. W. Bronk of the University of Pennsylvania, given under the auspices of Science Service over the network of the Columbia Broadcasting System.

Nerve impulses travel at rates from three to three hundred feet a second, and appear to be electrical in their nature. By an exceedingly delicate operative technique, it is possible to separate out a single nerve fiber from the hundreds with which it is usually trunked, and attach to it a wire leading to an electrical recording instrument. But single nerve impulses are so weak that for a long time it was exceedingly difficult to detect them. It was at this point that the development of radio amplification proved of benefit to physiologists. By magnifying these weak impulses more than a hundred thousand times, they can be made to register themselves on automatic recording mechanisms.

No matter where a nerve impulse originates, whether in eye or ear or touch organ, it seems to be the same thing as it travels back along the nerve fiber toward the brain or other nerve center. Why this is so is one of the still unsolved riddles of science.

Weak Stimulus, Few Reports

But one of the riddles that has been at least partially solved is that of nerve action under stimuli of differing intensities. A weak stimulus will cause only a few reports to be sent in from the sense organs that look out upon the outside world. It is as though only a few of a hundred outposts on a battle front were telephoning the appearance of a new body of troops. But a strong stimulus rouses all the sentries, and every nerve fiber carries its message to the brain.

The nerve messages have a range in frequency as well as in number of sending stations. A weak stimulus may cause only a few impulses a second, a strong one will speed the frequency up to more than a hundred—as it were the difference between the same telegrapher lazing along in slack time and piling dots and dashes onto the wire at top speed when crowded with work.

Composed of Simple Elements

In these two ways the central nervous system is informed of the quantitative differences in the outside world. And in the same ways—by differences in number of fibers used and in frequency of impulses along each fiber—are the orders from headquarters transmitted to the acting muscles. If the situation calls for little response, only a few impulses a second along a few outgoing fibers cause a few twitches of muscle fibers. If vigorous action is called for, thousands of fibers carry hundreds of impulses each per second, and the twitches blend into a powerful contraction of a whole series of muscles. The results may be quite complicated, but they are made up of these relatively simple single elements.

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ENGINEERING

New Swiss Lake Will Run Three Power Plants

THERE is a new lake in Switzerland to attract tourists.

Though its builders created a thing of beauty, electricity was what they really wanted when Grimsel glen at an altitude of 6,155 feet was dammed. From this height water of the lake will fall thorugh three power plants of 282,000 horsepower generating capacity before its usefulness is spent. One of these plants, at Handeck, has been completed.

The lake contains 300 million cubic feet of water and is three and one-half miles long. Its dam is 300 feet high and 110 feet long.

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METEOROLOGY

Heated Anemometer to Take Mt. Washington Wind Record

ACTIVITIES of scientists who will occupy a station on the summit of Mt. Washington this winter have been expanded by cooperation of Polar Year authorities.

Observations of aurora will be made with a special apparatus, the la Cour star box, that renders this work more useful. Joseph B. Dodge, who is making arrangements for the station, announced that a box has been received from the Department of Terrestrial Magnetism of the Carnegie Institution of Washington. This apparatus is essentially a diagram of the stars over which the observer pencils the aurora in the proper position.

A heated anemometer, the first to be tried in the United States, will also be used on Mt. Washington. A small electric stove heating element radiates to a copper dish inverted over it.

The dish has eight curved blades to catch the wind and is free to rotate. When clouds at subfreezing temperatures course over the summit the liquid droplets of which even these cold clouds are composed freeze onto all obstructions and grow into the wind like great horizontal icicles of rough white ice. The anemometers, or wind velocity indicators, quickly become so covered with ice that their rotation is greatly reduced. Frequent attention with torch or hot water is necessary if the wind record is to be maintained, unless some continuous source of heat can be made available.

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GEOGRAPHY-SOCIOLOGY

Politics Called Accidents Of Birth and Environment

Geographer Shows How Geographical, Economic and Social Forces Influence Voting Habits of People

POLITICS, like shapes of noses, color of skin and language, are still accidents of birth and early environment for many of the millions who will cast their ballots on Nov. 8. Many will vote the Republician or Democratic tickets because their fathers did so.

In the South, voting Democratic is just as indigenous as growing cotton. In rural New York, Republican votes are picked with the autumn apples.

The political habits of the nation are the subject of scientific study in a monumental work resulting from twenty years of original research by Dr. C. O. Paullin. Published by the Carnegie Institution of Washington and the American Geographical Society, the "Atlas of Historical Geography of the United States" contains among its maps a series illustrating the votes in all Presidential elections.

That the prevailing voting habits of any region spring from a complex interplay of geographical, economic and social forces is observed by Dr. John K. Wright, librarian of the American Geographical Society and editor of the atlas.

As all know, the outstanding contrast in the East is between the Democratic South and Republican North. Between the eastern and western halves of the country there are pronounced differences. In the East lies an intermediate zone of doubtful states where the outcome of elections is often decided. In this borderland of wavering loyalties are small areas that persistently show majorities for their favorite parties.

To the west Republicanism prevails along the Pacific Coast, the mining counties of California, Nevada, Idaho and western Montana tend toward the Democrats, and there is a generally Republican belt in eastern Montana, Wyoming, Utah, Colorado, Arizona and New Mexico.

A permanent political complexion was carried on the flow of settlement in many cases. Those who settled Oklahoma from the North brought Republicanism with them to the northern counties, while the southern and southeastern counties were settled from Texas and other states and have remained Democratic.

In western North Carolina, northern Georgia and the Cumberland plateau region of Kentucky and Tennessee, where small farmers worked poor land without slave help in the early days, Republicanism is ingrained. The Republican character of the Ozarks of southern Missouri has similar origin. But in richer agricultural land of the Appalachian Valley of Tennessee, the elephant also grazes peacefully today because the area was settled by non-slave-holding farmers from Virginia and Pennsylvania.

Deeply rooted in such facts of geography are party politics that will influence this November's voting.

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STATISTICS-PUBLIC HEALTH

Cancer More Prevalent Among Industrial Classes

CANCER is more prevalent among the industrial class than other classes of society. Deaths from cancer are continuously increasing. The increase during the past two years has been unprecedented and is greater among men than among women. Cancer deaths are increasing more rapidly among Negroes than among white people. Overweight persons past middle age succumb more readily to cancer than do men of average weight.

These facts, based on current statistics and a careful statistical study of the records of industrial and ordinary policyholders for 20 years since 1911 were presented to the New York Academy of Medicine in a paper by Dr. Louis I. Dublin, third vice-president and statistician of the Metropolitan Life Insurance Co.

His records showed that the death-rate from cancer of the mouth is about twice as high among the industrial policyholders as among men in better economic circumstances. That from cancers of the stomach, liver and esophagus is about one-third higher in the industrial class.

Cancer mortality formerly was considerably higher for women than for men, but due to the more rapid rate of rise among males, the cancer deathrates are now practically the same for both sexes. Among men between the ages of 45 and 74, cancer of the stomach, liver and esophagus constitutes the largest single group of malignant growths, being responsible for nearly half of all cancer deaths in the period 1927-1931. Among women of the same ages cancer of the stomach and liver constitutes the largest single group.

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SEISMOLOGY

Submarine Quake Reported Off Coast of Alaska

THE BOTTOM of the sea off the coast of Alaska was shaken by an earthquake on Sunday morning, Oct. 16, seismologists of the U. S. Coast and Geodetic Survey announced after examining data transmitted from nine observatories through Science Service. The epicenter, or point of greatest motion, was located in latitude 54 degrees north, longitude 158 degrees west. This is south of the Alaska peninsula and east of Kodiak Island. Time of origin was 7:08.1 a. m., eastern standard time.

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Wonders of Medicine

SEVEN WONDERS of modern medicine were listed by Dr. Bowman C. Crowell, associate director of the the American College of Surgeons, during the annual session of the College in St. Louis.

1. **IMMUNITY or RESISTANCE to diseases.**
2. **ANESTHESIA and ANALGESIA giving relief from pain.**
3. **ANTISEPSIS and ASEPSIS preventing wound infection and blood poisoning.**
4. **VITAMINS and FOOD VALUES.**
5. **LIGHT and VENTILATION.**
6. **ORGANOTHERAPY such as feeding liver to pernicious anemia patients, giving insulin to diabetics and thyroid gland extract to cretins.**
7. **PERIODIC HEALTH EXAMINATIONS to prevent the effects of certain diseases such as cancer.**

PUBLIC HEALTH

Control of Throat Infection Would Check Rheumatism

Operation of Law Requiring Domestics to Have Health Certificates Also Described to Public Health Association

THE CONTROL and reduction of rheumatic diseases depend to a considerable extent upon the control of throat infections with the germ known as the hemolytic streptococcus, relative of the scarlet fever germ, Drs. I. Pilot and D. J. Davis of the University of Illinois College of Medicine told the American Public Health Association at its meeting in Washington.

Sore throat is most often due to infection with this germ, and is frequently complicated by arthritis and other conditions which may be classified under rheumatic diseases, it was pointed out. Epidemics of sore throat are followed by an increase in the amount of these rheumatic diseases. Patients whose tonsils remain large and red after attacks of septic sore throat often complain of rheumatic pains in the joints. Persons without tonsils seem to be susceptible to the streptococcus infection also, although they seem to be troubled with symptoms of a head cold rather than with a sore throat. Such persons, however, are also subject to rheumatic complications.

Sore throat due to infection with the various types of hemolytic streptococcus is a communicable disease as is scarlet fever, and patients afflicted with such throat infections should be isolated and quarantined, as if they had scarlet fever, in order to prevent the infection spreading to others, the physicians warned.

Studies of the amount of rheumatic disease in different climates show that there is little of it in warmer, dry regions and much of it in colder, more humid sections.

"Typhoid Mary"

Cooks, nurses and other domestic employees in Newark, N. J., are now required by law to have a health certificate, the city's health officer, Dr. Charles V. Craster, told members of the Association. The ordinance, passed in 1930, is intended to protect children and other residents of the city from the chance of acquiring tuberculosis, typhoid fever or other communicable disease from servants.

The story of "Typhoid Mary" showed the danger to individual households of an undetected typhoid carrier employed as a domestic cook, Dr. Craster pointed out. The wide public interest aroused by this story of the typhoid-carrier cook who spread the disease by unconsciously contaminating the household's food led the New York and Newark health departments to require medical examination of food handlers.

By the new Newark law, all domestic employees must file with the department of health a certificate from a duly licensed physician setting forth that such a person is free from tuberculosis and any other communicable disease. The examination is good for six months. Provision has been made for free examination at the health department clinics. Penalty for failure to comply is a fine of $25 for the first offense and $50 for the second. Both employee and employer are liable. When a servant is found to be suffering from tuberculosis or a venereal disease in the active or contagious form, she is not allowed to continue in employment.

During the first eight months of 1932 10,161 examinations were made. There have been revealed 39 cases of skin disease, including impetigo, scabies, seborrhea, acne vulgaris, psoriasis and purpura; 115 cases of syphilis; and 34 cases of tuberculosis.

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—*Field Museum*

NAUTILOIDS, ONCE RULERS OF THE WORLD

BIOLOGY

Sharks May Have Saved World for Vertebrates

SHARKS, which men hardly rate as friends now, may have done our race a good turn long before it ever came into existence. These tigers of the sea quite possibly ended the world-dominance of an alien animal group, the nautiloids, and prepared for the ascendancy of the vertebrates, and finally man.

This suggestion is advanced by Dr. Augustus F. Foerste, who has just joined the staff of the Smithsonian Institution to make a study of its great collection of fossil nautiloid shells.

The nautiloids, represented now by only a couple of relatively small species, once bossed the seas of the earth. They were animals related to octopuses and squids, but lived in great coiled or straight shells. With their strangling tentacles and crushing parrot-like beaks for attack, and their strong stony armor for defense, they were the robber barons of the ancient seas, scores of millions of years ago before the Coal Age.

Then their empire fell, and fell suddenly. Nobody knows just why their end should have rushed upon them when they were apparently at the height of their success. Certainly nothing that swam the seas could have attacked a full-grown big nautiloid and got away alive. But Dr. Foerste suggests that the sharks, more active and alert even though weaker, ate up their eggs and young faster than they produced them, and thus brought about their downfall.

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PSYCHOLOGY

Are You Still Superstitious?

Despite the Spread of Knowledge of the Sciences, Superstitious Beliefs Are Held Today, Even by Teachers

By MARJORIE VAN DE WATER

SUPPOSE you were walking past a graveyard on the night of Friday the thirteenth in the dark of the moon and saw a falling star come down just as a black cat crossed your path. And you heard a dog howl, and an owl hoot three times. And then a church bell tolled out the hour of midnight.

Would you be scared? And would you cross your fingers and wish for a rabbit's foot?

Probably you are not superstitious enough to think that all these things mean anything in determining your fate. But a great many persons in the United States do believe in superstitious omens of good or bad luck—either these or others like them. Even educated persons may cling to a faith in omens which they learned in their early childhood. And, though their good sense tells them that superstition is foolish, yet habit will make them persist in acting as though such trivial incidents could change the course of human events.

Just how common magical thinking is, is shown by the results of a questionnaire distributed by Dr. A. O. Bowden, president of the New Mexico State Teachers College, among the parents of elementary school pupils in cities in fourteen states scattered widely over the Union from New Hampshire to Georgia and west to California. These results will soon be published in book form.

By magical thinking, Dr. Bowden does not necessarily mean belief in such age-old sayings as those listed above, but fallacious reasoning based on false ideas of a cause-and-effect relationship where such a relation does not exist.

For example, one of his questions was as follows:

"Do you believe that fish is a better brain food than bacon?"

The belief that eating fish will improve school grades is an example of the fallacious thinking which Dr. Bowden calls magical thinking. For it is based on the fact that the tissues of the brains are rich in phosphorus, and that fish also contains phosphorus.

Scientists tell us that the brain is nourished, as is the rest of the body, by the blood and that fish has no more value as a brain food than any other equally nourishing food. The belief that it has such special properties is akin to that which holds that "every part strengthens its part," that is, that the person with a liver ailment should eat liver, the runner confine his diet to pig's feet, and perhaps that the lover should be served generous portions of roast heart.

Primitive peoples stretched this idea even farther and held that plants which looked like human organs were good foods or medicine for that part—liverleaf or hepatica with a liver-shaped leaf for liver, trefoil for heart disease, thistle for a stitch in the side, yellow turmeric for jaundice, and even walnut shells for head injuries.

Dr. Bowden found that 59 per cent. of the general population and 32 per cent. of teachers believe that eating fish improves the brain.

He found that 85 per cent. of the population believe that beautiful pictures or fine music in the home or school will make people moral or virtuous. And 75 per cent. of teachers hold this view.

Electorate Infallible!

"Do you believe that the great majority of American people, by reason of their innate ability to tell right from wrong, will naturally take the right side of any big public question in the state or nation when allowed to vote on it?"

To this question, 84 per cent. of the non-teachers and 79 per cent. of the teachers answered yes. This despite the fact that many reforms have been urged for years before a favorable vote was secured.

Dr. Bowden believes that these figures indicate that notwithstanding the fact that public schools are available all over the land, America is not nearly so well educated as is generally believed.

But a psychologist reminds us that although the advance of science may be expected gradually to wipe out magic and belief in weird explanations of ordinary matters, still the very rapid development of science in our age may make it difficult or well nigh impossible for the mind of man to keep abreast.

The late Prof. Edgar James Swift, before his recent death head of the department of psychology of Washington University, St. Louis, in a new book on the Jungle of the Mind said that the recent stupendous discoveries of science have put us into an expectant, credulous mental attitude in which we are inclined to see nothing as impossible, nothing absurd.

Magic or Science

A few years ago it was necessary, in order to speak to a person, to approach within calling distance. Now we have only to direct our voices into a round object which the engineer calls a microphone, and the words may be heard at the ends of the earth without even wire to bridge the distance.

To the person who does not understand the scientific principles which make this possible, it may seem no more incredible that persons at a distance should be able to communicate without the aid of the radio merely by "projecting their thoughts."

Thus it becomes daily more difficult to distinguish between the true and the untrue, the real and the unreal, the scientific and the magical. And even educated persons are taken in by superstitions, new and old.

The ordinary general science course in high school tells the student nothing specific about the falsity of such unfounded sayings, and it is not easy for him to figure out why they are not true.

Your boy may search in vain through his text book in an effort to find out whether "lightning never strikes twice in the same place." He will probably find nothing to indicate whether the direction of the points of the new moon have anything to do with the dryness or wetness of the month following.

Probably the subjects of toads and warts, four-leaved clover and luck, cold hands and warm heart, and high foreheads and intelligence are all sadly neglected.

Consequently high school graduates, and college graduates too, continue to hear these things and hearing them believe them or are influenced by them.

Dr. Otis W. Caldwell and Gerhard E. Lundeen, of the Institute of School Experimentation, Teachers College, Columbia University, gathered together a list of two hundred unfounded beliefs —not all those that are regarded as important, but enough to serve as a basis for an interesting experiment.

The whole list of 200 was given in the form of a test to over a thousand high school seniors and college students. Each person was asked to indicate after each belief whether he had heard of it, whether he believed it, and also whether his actions were ever influenced by it.

The following beliefs selected from the list will give you an idea of what it was like:

Fat people are always good natured.

Dew falls from the sky.

If you tickle a baby you will cause it to stutter.

If the ground-hog sees his shadow on ground-hog day, there will be six weeks of bad weather.

Seven is a lucky number.

Dreams go by contraries.

Good people die young.

It was found that high school seniors on an average have heard of approximately half the 200 items in the list. They believe in about 20 per cent. or one-fifth of those with which they are familiar. They say, however, that they are influenced by even more of the ideas than they actually believe, 22 per cent.

Girls More Superstitious

College students have heard of more of the ideas than have the high school seniors, but they are influenced in and believe a smaller number. Girls are influenced by unfounded beliefs more than boys. And those in rural communities have heard of and are influenced by more unfounded beliefs than are the dwellers in cities. It is suggested by the scientists, however, that the city young people may have other superstitions which were not included in this list.

More than 80 per cent. of the high school seniors who had heard the saying, believe that when the plumage of birds is very heavy, that fact foretells a severe winter. But they are not so credulous regarding all the sayings. Although two-thirds had heard that a witch can and sometimes does conceal her identity in the form of a black cat, only two per cent. were inclined to fear a dark-hued kitty for this reason.

This information on what public school graduates actually believe will aid teachers in revising the science course to hit directly at prevalent unfounded beliefs—showing the youngsters which ideas are false and why they cannot be true. After all it may be quite as harmful for the business man to grow up believing that he can discover a man's honesty from the look in his eye, or his intelligence from the shape of his forehead, as it would be for him to believe in witches and hobgoblins.

Students List Beliefs

Some indication of the great number of old superstitious sayings that are still current in the United States and influencing life and behavior to a greater or lesser extent is given by another list compiled by students of the Wisconsin State Teachers College under the direction of Profs. J. O. Frank and H. W. Talbot.

A total of 488 students made individual lists of superstitions they knew to exist in the community. Altogether 1,224 different superstitions were reported!

Some of these were very common. "A black cat brings bad luck," appeared on all but four of the lists. "Finding a horseshoe brings good luck," was reported by 442. "Breaking a mirror brings bad luck," was reflected on 411 lists.

Thirteen of the more widely acknowledged of these superstitions are given on this page. With them you may test yourself and your neighbors to see how much influence superstition has in your community. In addition to asking, "Do you believe these things," question whether you ever act as though they might be important to you. For many a person will say "Oh, I know its all foolish, but I'll knock on wood anyhow just to be sure."

The following list is unusually interesting. It contains some of the more uncommon beliefs—those that appeared only on twenty lists.

1. Enter front door, leave back door—bad luck.
2. Put on left shoe first—good luck.
3. Northern lights bright—bad weather.
4. Job started on Friday—never finished.
5. Three lamps in a row—marriage.
6. Last rehearsal poor—play will be good.
7. Cow moos in night—someone dying.
8. Man dies in town—two more soon to follow.
9. Tell bad dreams before breakfast—dreams come true.
10. See bright object—kick it three times before picking it up—devil kicked out.
11. Stub your toe—will get a scolding.
12. Get up on wrong side of bed—cross all day.
13. Rain on wedding day—wedding unlucky.

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COMMON SUPERSTITIONS

	TRUE	FALSE
1. Friday the 13th is a very unlucky day.	....	....
2. Thirteen people at a table—death or bad luck.	....	....
3. Walking under a ladder brings bad luck.	....	....
4. Sing before breakfast—cry before night.	....	....
5. Four-leaved clover brings good luck.	....	....
6. A rabbit's foot brings good luck.	....	....
7. Dog howls at night—a death follows.	....	....
8. Groundhog sees his shadow on groundhog day—six weeks of bad weather.	....	....
9. Two persons walk on opposite sides of an object—bad luck.	....	....
10. Drop silver at table—company coming.	....	....
11. Warts removed by various charms.	....	....
12. Clothing on wrong—bad luck to change.	....	....
13. Amber beads will prevent goiter.	....	....

Even if you do not believe any of these superstitions, do you not allow your actions to be influenced by them?

PHYSIOLOGY

Queen Bees Developed On Fertility Vitamin

QUEEN BEES develop their full maternal powers, which make them the mothers of their hives, apparently because they are fed during infancy on food containing the fertility vitamin E. Their young sisters in the brood comb, denied this essential food element, grow up into practically sexless worker bees—"old maid" bees incapable of producing useful offspring even in emergencies.

Indications that this is the case have been obtained by Sir Leonard Hill and E. F. Burdett of the National Institute of Medical Research, London, in experiments reported to *Nature*.

The two English researchers kept female rats on a diet from which the fertility vitamin had been carefully excluded, so that they could not have young. Then they gave some of them minute daily doses of "royal jelly," the substance which is given to the young queen bees in the nursery cells but denied to young worker bees. Other rats were kept without this, as "controls." When mated with the same males, the females receiving the royal jelly produced litters of young, while the deprived rats remained without offspring.

Science News Letter, October 29, 1932

PUBLIC HEALTH

Effect of Depression On Health Will be Felt in Future

DON'T be misled into thinking the health of the country will not be affected by the depression, just because official figures show the present year to have been unusually healthy, warns the American Medical Association.

It is only natural that fatal industrial accidents and breakdowns due to disease unfavorably influenced by industrial employment should be less now when there is less employment, the Association points out. Likewise, enforced rest may possibly enable persons with tuberculosis, heart and kidney diseases and high blood pressure to live longer.

However, the ultimate effects of the depression will be seen in the future. The countries of central Europe are still paying the penalty of malnutrition among their children because of food shortages during war blockades. A similar fate may be in store for America.

"If dentistry is neglected, declares an editorial in the Association's journal, infections, arthritis, rheumatic conditions and heart disease may be expected in the future. Necessary surgical operations are being postponed until the last minute, when it is often too late to save the patient. As a result deaths from appendicitis, cancer, gallbladder disease and hernia will probably increase during coming years. Mental health is also being affected by worry over unemployment and economic insecurity.

"In the long run, no condition of prolonged depression and anxiety can inure to the benefit of the public health."

Science News Letter, October 29, 1932

PHARMACOLOGY

New Drug is Five Times As Powerful as Morphine

A NEW pain-relieving drug which is about five times as potent as morphine without the latter's habit-forming quality was described by Dr. Walter C. Alvarez of the Mayo Clinic at a recent staff meeting of the Clinic in Rochester, Minn.

The new drug is dihydromorphinone hydrochloride. It was developed in Germany in 1926 by the Knoll laboratories but it is only now being brought to the attention of physicians in this country. It is particularly useful for cases of cancer that cannot be operated on. It gives more relief from pain than morphine and prolongs the useful life of the patient, who can be up and working while taking this drug. Of course, it is not a "cure" but it does help the patient by relieving the pain and other symptoms of the last stages of the disease. Dr. Alvarez also suggested that it might be used in treating morphine addiction.

"Occasionally it may be helpful in the treatment of morphinism through its power to relieve distress while the patient is getting a grip on himself," he said.

The drug does not seem to be dangerous, does not produce the pleasurable sensations of morphine and consequently is not habit-forming. In a few persons it has some of morphine's nauseating effect, but to compensate for this it has none of the troublesome costive effect on the intestines.

The new analgesic is made from morphine hydrochloride with the help of a catalytic agent which causes it to combine with water.

Science News Letter, October 29, 1932

IN SCIEN

LIBRARY SCIENCE

Library of Unpublished Manuscripts Founded

SCIENTIFIC manuscripts which cannot be published in full because of hard times are to be assembled in a special library in Halle, Germany. Brief abstracts will be published in the standard scientific journals, each with an announcement that the original has been deposited in the Halle collection. German scientists regard the plan with much interest, and expect it to be extensively used.

Science News Letter, October 29, 1932

CHEMISTRY

Yeast Fed to Cows Multiplies Milk Vitamins

FEEDING COWS on irradiated yeast or other good source of vitamin D increases the vitamin D content of the cows' milk fifteen to thirty times, Drs. J. G. Hardenbergh and L. T. Wilson of the Walker-Gordon Laboratory Company, Inc., at Plainsboro, N. J., reported to the American Public Health Association in Washington.

Milk ordinarily contains only small amounts of vitamin D, but when this is increased by supplementing the cow's ration with a source of vitamin D, the milk acquires the rickets-preventing quality of this vitamin. The amount of vitamin D that must be fed the cows to give their milk rickets-preventing potency has been worked out and found not only not harmful but instead rather beneficial to the animals. The production of such a special milk must be under adequate official supervision to insure reliability, it was stated.

A practical, economical method of irradiating milk directly to give it high potency as a preventive of rickets was described by Dr. G. C. Supplee of the Dry Milk Company research laboratories of Bainbridge, N. Y. The method, which has been used commercially for nearly six years, is based on the application of high energy intensities for not more than sixteen seconds.

Science News Letter, October 29, 1932

EN FIELDS

ENTOMOLOGY

Bees "Gang Up" On Insect Murderer

IRATE CITIZENS of a beehive at the Brooklyn Children's Museum recently made short work of an insect thug that had killed two of their fellows and was threatening the lives of others.

The aggressor was a praying mantis, one of the big species that has become established in the New York region as an immigrant from the Orient. Mantises are carnivorous insects, preying on other insects by catching them in their powerful folding forelegs and chewing them up with their powerful jaws.

This particular murderer caught two bees, one in each foreleg, and devoured them at his leisure. Then he made for a third bee nearer the entrance of a hive. Instantly the bees fell upon him by dozens and hundreds, until the angrily buzzing mass was as big as a baseball. Unable to pierce his tough wings, they turned him over on his back. Then they inflicted swift and final punishment with their stings.

Science News Letter, October 29, 1932

MARINE BIOLOGY

American Oysters Mate With Japanese

REGARDLESS of politico-economic differences between the statesmen who eat them, Japanese and American oysters get along most amicably together. They are perfectly compatible in their mating activities, Dr. P. S. Galtsoff and R. O. Smith of the U. S. Bureau of Fisheries have found. The two investigators report their results in *Science*.

Sex in oysters is a quite topsy-turvy affair, from the higher-vertebrate point of view. The same individual is first male, then female. Both sexes discharge their sex cells into the water, and sperm-cells find and fertilize eggs as they float.

Dr. Galtsoff had previously shown that oysters in the female phase could be induced to discharge their eggs by the presence in the water of a small amount of the male sex element. American oysters would not respond to the sperm of any but their own species.

However, Dr. Galstoff and Mr. Smith have now discovered that oysters of a quite different species brought over from Japan supply sperm that stimulates female American oysters; and conversely, sperm from male American oysters causes egg discharge by the female Japanese bivalves.

The two species of oysters not only thus stimulate each other's egg-laying activities, but actual hybridization takes place, the two investigators report. The young hybrid oysters show no higher mortality than control cultures of the uncrossed parent species, and they appear to grow in healthy, normal fashion.

Science News Letter, October 29, 1932

GEOLOGY

Enormous Fuel Deposits Discovered in Germany

GERMANY'S fuel resources have received an important addition through the discovery of deeply buried lignite beds of enormous thickness, in the lower Rhine district. Exploratory deep borings indicate a total area of approximately a thousand square miles, with a maximum thickness of over 500 feet, Dr. Hans Breddin of the Aachen Mining Institute informed a Science Service correspondent. It is estimated that the deposit contains more fuel than the Pennsylvania coal beds, and at least fifty per cent. as much as all the exploitable coal reserve of Great Britain.

Lignite, or "brown coal" is a type of fuel softer than ordinary soft coal. Pressed into briquets, it is by far the most widely used domestic fuel in Germany and is much used under steam boilers as well.

The present open pit lignite mines operated in the lower Rhine region already yield about a fourth of Germany's total lignite output, and they only nibble the edges of the huge deposit described by Dr. Breddin. The present workings have developed where the overlying layers of earth and rock were thinnest. To get at the best of the newfound beds it will be necessary to go through an over-burden as much as 1,500 feet thick, often containing water-bearing strata which will make the job of mining much harder. It will be necessary to organize mining plants on a titanic scale to bring about the most profitable exploitation of the beds.

Science News Letter, October 29, 1932

ENGINEERING

No Big Industry Seen In Steel House Production

IN THE FACE of a virtual epidemic of steel residences springing up all over the country, the U. S. Steel Corporation has decided that the mass production of standardized steel houses will not become a big new industry.

A survey of 56 new systems of steel construction now invading the brick, mortar and lumber industries was made before this conclusion was reached, F. T. Llewellyn, consulting engineer for the Steel Corporation, told the American Institute of Steel Construction at Pittsburgh.

Mr. Llewellyn believes, however, that houses of individual design using standardized steel units will furnish the chief demand for steel for home building. He said the survey showed that conditions attending the construction of residences have very little in common with those fields in which multiple production methods are applicable, such as in the manufacture and marketing of automobiles.

It was announced that a booklet describing new uses for steel in the home is being prepared.

Science News Letter, October 29, 1932

ZOOLOGY

The Owl and The Pussycat Rivals at Mouse-Catching

See Front Cover

ONE of the favorite riddles of childhood was, "Spell 'mousetrap' in three letters"; and the answer was "C-A-T." With even more appropriateness the answer might have been "O-W-L," for the Owl is an even better mousetrap than the Pussycat, besides being somewhat more restrained in the matter of midnight serenades, and not addicted to messing up the place with frequent litters of kittens. Mankind might well look upon owls as special gifts of Providence for the abatement of mice. Owls, on the other hand, might consider men as special gifts of Providence for the building of barns to live in, and the cultivation of grain crops to insure an abundant supply of mice. It all depends on the point of view.

The solemn gentleman portrayed on the cover of this issue of the SCIENCE NEWS LETTER posed for Cornelia Clarke.

Science News Letter, October 29, 1932

PHILOLOGY

History Through Language

"A Classic of Science"

Words Common to Many Languages Give Clues to Customs Of Our Savage Ancestors, Which Archaeologists Check

THE ORIGIN OF THE ARYANS, An account of the Prehistoric Ethnology and Civilisation of Europe. By Isaac Taylor. New York, Scribner & Welford, 1890. This is an exact reprint of extracts from the original publication.

WHEN towards the close of the last century Sanskrit and Zend became known to European scholars, the new science of Comparative Philology came into existence. The first stone of the edifice was laid in 1786, when Sir William Jones made the memorable declaration that the similarities between Sanskrit, Greek, Latin, German, and Celtic could only be explained on the hypothesis that these languages had a common parentage. Hegel hardly exaggerated the consequences of this discovery when he called it the discovery of a new world.

Fifty years elapsed before Bopp succeeded in establishing, as a settled conclusion of science, what had hitherto been little more than a probable hypothesis. His *Comparative Grammar*, published in 1833-35, has been superseded in its details by other works, and it has now only an historical interest. But to Bopp belongs the honour of having discovered the method of the comparison of grammatical forms, which at once placed Comparative Philology on a scientific footing. In this and subsequent works Bopp showed that Zend and Slavonic, as well as Albanian and Armenian, must be included in what he called the Indo-Germanic family of speech.

The great linguistic family, whose existence was thus established, embraces seven European groups of languages—the Hellenic, Italic, Celtic, Teutonic, Slavonic, Lithuanic or Lettic, and Albanian; in fact, all the existing languages of Europe except Basque, Finnic, Magyar, and Turkish. There are also three closely related Asiatic groups: the Indic, containing fourteen modern Indian languages derived from Sanskrit; secondly, the Iranic group, comprising Zend, Persian, Pushtu or Afghan, Baluchi, Kurdish, and Ossetic; and, thirdly, the Armenian, which is intermediate between Greek and Iranian.

No name, altogether unobjectionable, has been devised for this family of speech. Japhetic, modeled after the pattern of Semitic and Hamitic, involves the assumption of a descent from Japhet. Caucasian is both too narrow and too broad, and, if used at all, is applicable to race rather than to language. Sanskritic gives undue prominence to one member of the group. Indo-Germanic and Indo-European are not only clumsy, but inaccurate. The first, adopted by Bopp, is a favourite term in Germany; but French and Italian scholars see no reason why German should be taken as the type of European speech. Indo-European, which they prefer, is too narrow, since it excludes Iranian and Armenian, and too broad, since the languages in question are spoken only in a part of India and a part of Europe.

Aryan, a term invented by Professor Max Müller, is almost as objectionable as Sanskritic, since it properly designates only the Indo-Iranian languages, in which sense it is used by many continental scholars. Moreover, it tacitly implies or suggests that the ancient Ariana, the district round Herat, was the cradle of the Aryan languages, and thus begs the whole question of their European or Asiatic origin. However, since the term has the great merit of being short and compact, and since it is almost universally adopted by English writers, and is increasingly used in France and Germany, it will, in spite of its manifold demerits, be employed in the ensuing pages. . . .

It cannot be insisted upon too strongly that identity of speech does not imply identity of race any more than diversity of speech implies diversity of race. The language of Cornwall is the same as the language of Essex, but the blood is Celtic in the one case and Teutonic in the other. The language of Cornwall is different from that of Brittany, but the blood is largely the same. Two related languages, such as French and Italian, point to an earlier language, from which both have descended; but it by no means follows that French and Italians, who speak those languages, have descended from common ancestors. The most inexperienced eye can distinguish between a Spaniard and a Swede, and yet both speak Aryan tongues, and even in Northern and Southern Germany there is a manifest difference of race, though the language is the same.

PRIMITIVE OX-CART

Pictured on a Thracian coin. This type of vehicle, whose wheel had no hub, was one of the earliest inventions of the "Aryan" races.

The Neolithic Culture

It is plain that the civilisation which we find in Europe at the beginning of the historic period was gradually evolved during a vast period of time, and was not introduced, cataclysmically, by the immigration of a new race. Just as in geological speculation great diluvial catastrophes have been eliminated and replaced by the action of existing forces operating during enormous periods of time, so the prehistoric archaeologists are increasingly disposed to substitute slow progress in culture for the older theories which cut every knot by theories of conquest and invasion.

The most recent results of philological research, limited and corrected as they have now been by archaeological discovery, may be briefly summarised. It is believed that the speakers of the

primitive Aryan tongue were nomad herdsmen, who had domesticated the dog, who wandered over the plains of Europe in waggons drawn by oxen, who fashioned canoes out of the trunks of trees, but were ignorant of any metal, with the possible exception of native copper. In the summer they lived in huts, built of branches of trees, and thatched with reeds; in winter they dwelt in circular pits dug in the earth, and roofed over with poles, covered with sods of turf, or plastered with the dung of cattle. They were clad in skins sewn together with bone needles; they were acquainted with fire, which they kindled by means of fire-sticks or pyrites; and they were able to count up to a hundred. If they practised agriculture, which is doubtful, it must have been of a very primitive kind; but they probably collected and pounded in stone mortars the seeds of some wild cereal, either spelt or barley. The only social institution was marriage; but they were polygamists, and practised human sacrifice. Whether they ate the bodies of enemies slain in war is doubtful. There were no enclosures, and property consisted in cattle and not in land. They believed in a future life; their religion was shamanistic; they had no idols, and probably no gods properly so-called, but reverenced in some vague way the powers of nature.

This general picture of primitive Aryan culture has now to be substantiated in detail, and the gradual progress in civilisation and the arts of life has to be traced from the scanty materials which we possess.

Metals

That the Aryans before the linguistic separation, were still in the stone age may be inferred from the fact that no Aryan etymology has been found for the word "metal," which is regarded by Oppert and Renan as a Semitic loanword obtained from the Phoenicians. There is no common word in Aryan speech to denote the art of the smith, and many of the words relating to his trade refer primarily to stone. Each of the Aryan families of speech has an independent name for the smith, a sufficient proof that the arts of smelting and forging metal were later than the linguistic separation. More especially the old theory that the Celts were the vanguard of the Aryan race, who brought with them into Europe the knowledge of metals, falls to the ground, in face of the fact that the Celts have for the smith their own peculiar designation, *goba,* which bears no resemblance to the corresponding words in other Aryan languages, such, for instance, as the Latin *faber,* the Greek *chalkeus,* the Teutonic *smid,* or the Slavonic *vutri.* . .

Cattle

The wealth of these primitive people consisted almost wholly of their herds. This is indicated by the fact that the collective name for cattle, which appears in Latin, Sanskrit, Zend, Lithuanian, and German, denoting originally that which has been tied up, has been the source of numerous words denoting property and money, such as *peculium* and *pecunia* in Latin, and our *fee,* which is the Anglo-Saxon *feoh,* meaning both property and cattle, and identical with the German *vieh,* a cow. The ox, which is figured on early Roman coins, may be a survival from the time when the ox was the standard value and the medium of exchange, and the coin may probably have at first represented the value of the animal. This is supported by the fact that in the Homeric age the measure of value was the ox. The arms of Diomed are worth nine oxen, those of Glaucus are worth an hundred. The tripod, which was the first prize for the wrestlers, was worth twelve oxen. One female slave is valued at twenty oxen, another at four. . . .

Dress

The clothing of the Aryans of the neolithic and even of the bronze age consisted chiefly of the skins of beasts, the flesh, and perhaps the hair, having been removed by stone scrapers, which are extremely numerous, even as late as the bronze age. These skins were sewn together by means of bone needles, which are found in great abundance. Caesar says of the Britons *pellibus sunt vestiti,* and Tacitus tells us that the same was the case with some of the Germans. In the Swiss and Italian pile dwellings fragments of leather, tanned by some rude but effective process, have been found.

Flax, whose very name implies that it was used for weaving (Latin *plecto,* German *flechten*), was spun and woven by the women of the neolithic household, as is evidenced by the spindle whorls and loom weights so abundantly found in the Swiss dwellings of the stone age. In several settlements linen fabrics have been discovered. The threads of the warp, consisting of two fibres of flax twisted together, must have been hung with weights from a

Shower of Stars

Which fell on the night of Nov. 12-13, 1833, is described by eyewitnesses in

THE NEXT CLASSIC OF SCIENCE

MEDICINE

Sick Scientist Calls "Mild" Wrong Word for Typhus

TYPHUS FEVER in the United States is officially termed mild endemic American typhus. Dr. R. E. Dyer, U. S. Public Health Service scientist who was stricken with the disease while investigating it, now thinks the word mild hardly strong enough to describe it.

"Where do they get that mild stuff?" Dr. Dyer ironically asked fellow scientists who have visited him at the U. S. Naval Hospital where he is slowly recovering from the disease.

Dr. Dyer has been ill since October 1, and is not yet able to sit up, though he is already directing the work of his assistants in the laboratory. Visitors find that he shows plainly the effect of the acute illness he has suffered. He is haggard and has the appearance of a man who has been very sick. His normally strong, masculine voice is now weak and quavering. Yet he has retained his optimistic outlook on life and is keenly interested in the typhus fever research.

Dr. Dyer directed the work which resulted in discovering the flea as the carrier of American typhus fever, and he and his associates have been trying to develop a vaccine to give immunity to the disease.

horizontal bar, the similar threads of the woof being interlaced by means of needles of bone or wood. That the flax was cultivated is shown by the stores of linseed which have been found. In some of the earlier settlements in Southern Germany, where flax was unknown, ropes and mats were made of bast, prepared from the bark of the clematis or the lime. There is no evidence that hemp was known in the age of stone or even of bronze.

Curiously enough, though flax was so commonly used for weaving in the stone age, there is no evidence in the pile dwellings of Switzerland or Italy of the weaving of wool, even in the bronze age, when sheep had become numerous. Evidently the sheep skins were worn with the wool on, as is still the case with the peasants of Central and Southern Italy. Woollen fabrics have, however, been found in Jutland, and in Yorkshire, associated with interments of the bronze age. . . .

The Boat

Some sort of boat, or rather canoe, must have been constructed in the primitive period, since the Latin *navis* can be traced in Sanskrit, Greek, Celtic, and Teutonic. But the word cannot at first have denoted more than the trunk of a tree hollowed out by the stone axe, with the aid of fire. This is indicated by the etymological relation of the Sanskrit *daru*, a boat, to the English *tree*, and the Celtic *daur*, an oak. Similarly the old Norse *askr* denotes a boat as well as an ash tree. Several "dug-outs," hollowed out of a single trunk, have been found in the neolithic lake settlements of Switzerland, Italy and Ireland. The Celtic *barca*, the old Norse *barki*, and the English *barge* and *barque* are indications that the Northern Aryans also constructed canoes of the bark of some tree, probably the birch.

The canoes were propelled by oars or poles, since the Latin *remus* can be traced in Sanskrit, Greek, Celtic, and Teutonic. Sails, however, were unknown in the primitive period, as is shown by the fact that the German *segel*, our *sail*, is a loan-word from the Latin sagulum. Thus the Teutonic invasions of England were only made possible by previous contact with Roman civilisation.

An examination of the nautical terms in Latin yields some curious results. According to George Curtius, they divide themselves into three classes. We have first the proto-Aryan words *navis* and *remus;* secondly, *velum* and *malus*, which are words of Italic origin, not belonging to the general Aryan vocabulary; and thirdly, a large number of loan-words from the Greek, such as *gubernare, ancora, prora, aplustre, anquina, antenna, faselus, contus,* and *nausea.* Hence it would appear that the undivided Aryans had invented canoes and oars, that the mast and the sail were used on inland waters after the linguistic separation of the Italic and Hellenic races, while the fact that the Latin word for sea-sickness is a loan-word from the Greek may indicate that the Italic peoples did [not?] venture to navigate the sea before they came in contact with Greek civilisation. It has already been noted that while the words relating to pastoral and agricultural pursuits are to a great extent identical in Greek and Latin, those referring to fishing, such as the names of the net, the line, and the hook, are entirely unrelated.

The Ox-Waggon

Indubitably the greatest invention of the primitive Aryans was the ox-waggon. The names of the wheel (Latin, *rota*), of the yoke (Latin, *jugum*), of the wain (Sanskrit, *vahana*), and of the axle (Sanskrit, *aksha*), are common to all Aryan languages. The old Irish *carr* and the Latin *carrus* may also be compared with the *karama* which Hesychius tells us was the name of the covered waggon, or tent upon wheels, in which the nomad Scythians moved from place to place in search of pasturage for their cattle.

On a Thracian coin of the beginning of the fifth century B. C., which is attributed to the Odomanti, who inhabited the pile dwellings in Lake Prasias, we have the earliest representation of the primitive Aryan ox-cart. The body is of wicker-work, poised over the axle, and is drawn by means of a pole by a yoke of oxen. . . .

The primitive ox-waggon must have been constructed without metal. The wheel and the axle were probably in one piece, made out of the section of the trunk of a tree, thinned down in the middle so as to form an axle, and leaving the two ends to serve as wheels. Such waggons are still used in Portugal. They are drawn by oxen, and have two wheels only. A log is cut from the trunk of a tree, and the centre is hacked away, leaving two solid wheels united by an axle.

Science News Letter, October 29, 1932

SWINGING ROOF GOES UP

ENGINEERING

Sheet Steel Roof Swings Over Building

A STRIP of a novel sheet metal roof is shown by the view above swinging into place over grain elevators at Albany. The long ribbons of steel hang 140 feet between sides of the building as a grape vine swing might loop from tree to tree in the forest. It is claimed that this novel, self-supporting roof, without columns, stanchions or purlins common to other types, is more economical than the usual kind. The strips of steel, which are slightly more than four feet wide, were welded together by the Lincoln Electric Co. More than 400 tons of metal were used.

Science News Letter, October 29, 1932

Latest scientific methods of removing coats of varnish and dirt from valuable old paintings reveal that modern concepts of some of the old masters' favorite colors have been considerably off-key.

MEDICINE

Surgeon Suggests Golden Rule To Combat Nervous Troubles

Causes of Backache Analyzed, Safe Hospitals Advised And Delicate Operations Described at Meeting of Surgeons

THE "GOLDEN RULE" as an essential aid to happiness was advocated in a talk by Dr. A. W. Adson, associate professor in surgery at the Mayo Foundation. Dr. Adson spoke on nervousness, at the community health meeting sponsored by the American College of Surgeons gathered in St. Louis. He said that treating one's neighbor as one's self increases one's circle of friends, which is essential to happiness and contentment.

"Selfishness and jealousy need be controlled in order to radiate friendliness," he declared. "The stress of modern life, with the anxiety and fear of being unable to compete with friends and neighbors in financial and social circles, results in unhappiness which often leads to broken homes. Phobia, that is, the fear of having a disease, gives rise to nervous symptoms which often are more difficult to treat than the disease itself.

"Ugly disposition, insomnia and various forms of dyspepsia are symptoms of nervousness which are brought on by fatigue, worry, unbalanced diet and the lack of proper recreation."

Backache Has Many Causes

Your back may ache because you do too little or too much work, because your posture is poor, or because of many other factors, including such serious ones as tuberculous infection of the spine. The many causes of backache and some remedies for it were described by Dr. Philip H. Kreuscher of Loyola University School of Medicine, Chicago, before the American College of Surgeons.

"The actual treatment of backache is not by the use of pills or plasters," Dr. Kreuscher warned. "Not by the rubbings of those who rub; not by the adjustments of those who adjust, but by an annual, systematic examination by your family physician and then upon him falls the duty of keeping you well and avoiding the ache in your back.

"Some take their play and recreation too seriously while others because of lack of exercise permit conditions to develop in the bones and muscles and joints of the body which predispose to aches and pains," Dr. Kreuscher said of the causes of this common complaint.

"Some people are too thin and have backache because the bones and nerves are not covered sufficiently with fat. Others are too fat and the carrying about of the extra weight gives them backache."

2,294 Hospitals on List

If you want to choose a safe hospital to care for you when you are ill or injured, consult the list of hospitals approved by the American College of Surgeons, advised Dr. Malcolm T. MacEachern, associate director of the organization.

The list of approved hospitals is published in leading newspapers throughout the United States and Canada each October, Dr. MacEachern said. There are now 2,294 such institutions, as compared with 89 which the College of Surgeons found came up to its standards 15 years ago when it first took up standardization of hospitals. If you missed the list in your newspaper, your family physician can tell you which hospitals in your neighborhood are on it, Dr. MacEachern said, or you can tell it yourself by the Certificate of Approval displayed near the admission desk of most of the approved hospitals, just as your doctor has his M.D. certificate framed and hanging in his office.

The death rate has been reduced more than one-half in approved hospitals during the past ten years, Dr. MacEachern pointed out. Methods of giving anesthesia and of treating various conditions have been greatly improved and the patient's average stay in the hospital is only half the number of days it was ten to twelve years ago. A specialist inspects each hospital before it is approved and resurveys it each year, Dr. MacEachern said.

Bullet Taken from Brain

A delicate operation in which a bullet was removed from its four-year-old lodging place in the patient's brain was described by Sir William I. de Courcy Wheeler, distinguished Irish surgeon. Removal of the bullet restored to normal the patient's memory, vision and hearing, which had all been distorted during the four years that the bullet was in his brain. The bullet had lodged in the "association area" which Sir William described as one of the resting places of the intellect which are centers for memories of things you have seen and things you have heard.

Science News Letter, October 29, 1932

BINDER COVERS

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ARCHAEOLOGY

Court Decision Spurs Search of Mexican Ruins

THE MEXICAN Supreme Court has ruled that the country's archaeological sites are under jurisdiction of the federal government, and not that of the individual states.

Upheld by this decision, federal government archaeologists will proceed at once to make excavation at Monte Alban where the spectacular discovery of a treasure tomb was reported last January. Alfonso Caso, government archaeologist and discoverer of the Monte Alban tomb, has already gone to the site accompanied by a staff consisting of Eduardo Noguera, Juan Valenzuela, Horacio Herrera, Augustin Garcia, and six archaeology student assistants.

A three times greater appropriation is available for the coming season at Monte Alban. More tombs are to be excavated. These appear to be almost innumerable, the ancient necropolis seeming to have had a vast population of dead. The surveying and stratigraphic studies will be resumed, and the archaeologists hope to learn something of the relationship between Monte Alban and the Maya region.

At the ruins of a Zapotec fortress city called Quiengola, archaeologists will start other explorations. Quiengola has never heretofore been studied.

The coming of the dry season has been awaited in order that explorations at Texmelincan, in the mountains of Guerrero, may be resumed. At the Toltec city of San Juan Teotihuacan, excavation of the "Avenue of the Dead" will continue.

At the Mayan city of Chichen Itza, in Yucatan, Mexican government archaeologists will continue to explore the interior of the city's highest pyramid and temple. This is the Temple of Kukulkan, the Bird-Snake. Within the 90-foot pyramid on which the temple stands, a smaller temple-topped pyramid was found last season. This year tunnels will be bored to fix the shape and size of the inner pyramid and to determine whether there may be still more structures hidden within.

At Cholula, where the largest pyramid in the world is located, excavations were not interrupted by the rainy season, because all the work has been under shelter. Innumerable smaller structures have been found inside the great pyramid, as if several city blocks of minor buildings had been covered up.

Science News Letter, October 29, 1932

RADIO

The Science Service radio address next week will be on the subject,

WHAT BLOOD TELLS

by

Dr. M. H. Jacobs

Professor of Physiology at the University of Pennsylvania and Director of the Marine Biological Laboratory, Woods Hole, Mass.

FRIDAY, NOV. 4

at 12:45 P. M., Eastern Standard Time

Over Stations of

The Columbia Broadcasting System

PLANT PATHOLOGY

New Beet Variety Resists Disease

U. S. NO. 1. That is the name of a beet: a new variety produced by the plant breeders of the U. S. Department of Agriculture to strike the first heavy blow at the curly-top disease which is a grave menace to the whole western beet-sugar industry and at present actually affects seriously one-third of the total acreage planted to beets.

U. S. No. 1 has a high degree of resistance to curly top, and although the scientists believe that even better varieties will be produced in the future, they feel that this one is quite good enough to justify extensive planting. Test plantings have shown the new variety to produce from twelve to eighteen tons an acre, while commercial varieties grown in comparison yielded from seven to fourteen tons. The new beet produced from 4,189 to 6,185 pounds gross sugar an acre and the other from 2,755 to 4,738 pounds.

It is planned to have all the seed of U. S. No. 1 grown in this country, thus establishing an extensive new American industry, and at the same time enabling the Department of Agriculture to exercise effective supervision over it. It is expected that enough seed for the entire acreage now infested with curly top will be available by 1934.

Science News Letter, October 29, 1932

BOTANY

NATURE RAMBLINGS *by Frank Thone*

Vegetable Assassin

AS THE SHRUB thickets and weed patches become more and more reduced to bare brown stems, we are able to see more clearly some of the assassins' work that has been going on among them during the summer. In almost any tangle, especially in low, rich lands, you are apt to find the way blocked by thin but rawhide-tough stems of dodder, that bind stalks and branches into one yielding but impenetrable mass.

Ordinary vines, like those of the bindweed or even of the woody grape or Virginia creeper, can be rent loose of their tendrils or twinings, but if you tug on the dodder either its stems break in your fingers or the branch to which they are holding has to give way. If you look at their points of attachment you will see why. Instead of merely twining round or hanging on with twisted tendrils, the dodder has driven little rootlike processes into the very fiber of its support.

And these rootlike processes are not mere supporting fingers, either. They are so many hungry vampire mouths that suck the life sap of the unfortunate plants that are their victims, for the dodder is a complete parasite.

As the dodder starts in the spring from the seed, it looks innocent enough. It has its pair of little green leaves, like any other respectable plant. But from the time it wraps its first coil around a plant stem it betrays its tiger ways. It drives the sucking fingers into its unwilling host, it abandons its own roots, it never produces any more leaves, and it remains a pallid yellow, never wearing the good chlorophyl green which is the badge of all honorable, self-supporting plants.

Science News Letter, October 29, 1932

First Glances at New Books

Additional Reviews On Page 284

Astronomy

KOSMOS—William de Sitter—*Harvard,* 138 p., $1.75. The Lowell lectures of 1931 are given permanent recording in this book. Dr. de Sitter, a modern universe maker, presents the leading principles and the evolution of man's ideas about the universe. He says: "I hope to have made clear the fundamental elements common to the attitudes at different epochs, which are often apparently so different, and to have shown how at all times the efforts of great men were directed towards the discovery of the great principle of unity, which I cannot express better than by the Greek word chosen as the title of the book."

Science News Letter, October 29, 1932

Physics

RECENT ADVANCES IN ATOMIC PHYSICS—2 vols.—Gaetano Castelfranchi—*Blakiston,* $4 each vol. In these two volumes, the first of which is devoted to atoms, molecules and electrons, and the second of which is devoted to the quantum theory, the research within the atom, conducted in recent years, is given comprehensive but simple treatment. The author is professor in the High School for Engineers in Milan, while the translators, W. S. Stiles and J. W. T. Walsh, are on the staff of the National Physical Laboratory at Teddington, England.

Science News Letter, October 29, 1932

Biology

THE GROWTH OF LIVING THINGS—Evelyn Cheesman—*McBride,* 192 p., $2. A first book of nature study written by the Curator of Insects of the Zoological Society of London. It treats of more than mere physiological growth; it takes in sensory and psychological development as well, and at least some suggestions of ecology.

Science News Letter, October 29, 1932

Physics

THE PRINCIPLES OF OPTICS—Arthur C. Hardy and Fred H. Perrin—*McGraw-Hill,* 632 p., $6. This comprehensive text developed at the Massachusetts Institute of Technology will prove of service to many engineers whose college training was received at a time when optics was not regarded as an essential part of an engineering education. It constitutes a valuable reference work. The authors observe: "There is as yet no profession that can truly be called optical engineering. In this respect, optics differs from the other branches of physics, such as mechanics, heat, electricity, and acoustics. Nevertheless, the ever-increasing importance of optics in industry makes it seem not unlikely that the profession of optical engineering will eventually assume its rightful place alongside the established engineering professions."

Science News Letter, October 29, 1932

Sociology

AMERICAN CIVIC ANNUAL—Edited by Harlean James—*American Civic Association,* 276 p., $3. To anyone interested in a better environment in which to live this periodic summary prepared by the American Civic Association is interesting and profitable reading. The short sections of the annual are written by authorities and cover national parks, land planning, the federal city, housing, regional planning, state planning, roadside improvement and various aspects of improvements in cities and towns. There is also a list of the members of the American Civic Association under the title "Who's Who in Civic Achievement."

Science News Letter, October 29, 1932

History of Science

SCIENCE AND SUPERSTITION IN THE EIGHTEENTH CENTURY—Philip Shorr—*Columbia Univ. Press,* 82 p., $1.50. This critical examination of the scientific contents of the two great standard encyclopedias of the eighteenth century, Chambers' *Cyclopedia* and Zedler's *Universal Lexicon,* gives sharp evidence that even the Enlightenment left a good many corners of the human mind unilluminated.

Science News Letter, October 29, 1932

Botany

ROADSIDE FLOWERS OF THE PACIFIC NORTHWEST—Drew Sherrard—*Metropolitan Press (Portland, Ore.),* 32 p., 4 pl., $1. Brief essays on the ecological side, attractively bound. In a pocket in the back of the book are four packets of Western wildflower seed, guaranteed to be true to name.

Science News Letter, October 29, 1932

General Science

TRANSACTIONS OF THE WISCONSIN ACADEMY OF SCIENCES, ARTS AND LETTERS, Vol. XXVII, 606 p., $2., to non-members.

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Chemistry

FIXED NITROGEN—Edited by Harry A. Curtis—*Chemical Catalog Co.,* 517 p., $12. A detailed and authoritative story of chemistry's conquest of the world's nitrogen problem is told in this American Chemical Society monograph to which over a dozen authorities contribute one or more chapters. Dr. Curtis observed that at the beginning of the present century there existed a "nitrogen problem." The agricultural and industrial demands for nitrogen compounds were increasing rapidly and the natural sources of supply were limited. Today the "nitrogen problem," if there exists one, is to find a market for the output of fixed nitrogen potentially available.

Science News Letter, October 29, 1932

Geography

FIRST REPORT ON FOREIGN GEOGRAPHIC NAMES—U. S. Geographic Board—*Govt. Print. Off.,* 113 p., 10c You may spell it *Angora* if you like, but *Ankara* is better. *Antioche* or *Antakiya* are now preferable to *Antioch. Antwerpen* and *Bruxelles* are the right spellings for the Belgian metropolises. The correct adjectivial form is *Czechoslovak,* not *Czecho-Slovak* or *Czechoslovakian.* These and thousands of other mooted spellings are settled officially in this new and highly useful Government publication, with locations and concise essential information thrown into the bargain.

Science News Letter, October 29, 1932

Mathematics

THE USEFULNESS OF MATHEMATICS TO ENGINEERS—P. W. Ott—*Ohio State University.* Prepared to convey information to prospective engineering students and their parents, this circular of the Engineering Experiment Station will be profitable reading to anyone who is a bit hazy on the practical utility of mathematics.

Science News Letter, October 29, 1932

Plant Pathology

INITIAL STUDIES OF AMERICAN ELM DISEASES IN ILLINOIS—Hubert A. Harris—*Illinois Natural History Survey,* 70 p., Free. Because of the importance of elms as street and lawn trees, this report will be welcomed by nurserymen, foresters and teachers throughout the Midwest and indeed over the whole elm-growing area of the United States and Canada.

Science News Letter, October 29, 1932

• First Glances at New Books

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Physics

THE INTERPRETATION OF THE ATOM—Frederick Soddy—*Putnam,* 355 p., $5. Prof. Soddy's book "The Interpretation of Radium," was long a classic. This book was written to take its place. The Nobel Laureate in Chemistry for 1921 says in the preface: "The fundamental reconstruction of our outlook upon the world of matter, energy, space and time which is now being attempted, mainly as a consequence of the successes of the theory of relativity, seems to neglect the ordinary phenomena of Nature in favour of the exceptional. It has not yet succeeded in giving us any consistent or complete mental picture in place of the older and more mechanical views. In this exposition these purely symbolic and physically meaningless conceptions enter only so far as they are unavoidable. The objective is rather the interpretation of the ordinary properties of matter which the new views singularly fail to account for."

Science News Letter, October 29, 1932

Nature Study

NATURE RAMBLES: AUTUMN—O. P. Medsger—*Warne,* 160 p., $2. Fortunate is he who can walk the autumn woods seeing the things that therein dwell, through Oliver Medsger's eyes. He has a winning informal way of making his reader into a co-observer that is not possessed by many other nature writers. The present book constitutes the third in a series; presumably to be followed by a fourth on Winter rambles.

Science News Letter, October 29, 1932

Psychology

THE HOUSE THAT FREUD BUILT—Joseph Jastrow—*Greenberg,* 293 p., $2.50. A book for the layman describing the Freudian theory in very readable style.

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Chemistry

CHEMICAL ANALYSIS BY X-RAYS AND ITS APPLICATION—Georg von Hevesy—*McGraw-Hill,* 315 p., $3. This volume is the result of the author's visit to Cornell University where he occupied the George Fisher Baker Non-Resident Lectureship in Chemistry. The first part of the book is devoted to the problems of X-ray spectroscopy as they affect the work of the X-ray analyst. In the second part, Prof. von Hevesy tells of the discovery and investigation of the properties of hafnium, in which he was a major actor. The problems of the abundance of the elements and the composition of the earth and the solar system are dealt with in the third part, while there is also included a lecture on the age of the earth. Prof. von Hevesy is professor of physical chemistry at the University of Freiburg.

Science News Letter, October 29, 1932

Biography-Exploration

THE SAGA OF FRIDTJOF NANSEN—Jon Sörensen—*Norton,* 372 p., $4.50. Nansen's name and deeds are written in the annals of both geographical exploitation and humanitarianism. This is in a sense the official biography, but it is nevertheless readable and inspiring.

Science News Letter, October 29, 1932

Psychology

PSYCHOLOGY TODAY—Edited by Walter V. Bingham—*University of Chicago Press,* approx. 540 p., $1.50. A compilation of a series of popular radio talks given under the auspices of the National Advisory Council on Radio, by prominent psychologists. An appendix contains the study manuals or listener's notebooks which were prepared for the radio audience and which include liberal illustrations, a chapter of explanation, and suggested references for additional reading.

Science News Letter, October 29, 1932

Engineering

PHOTOCELLS AND THEIR APPLICATION—V. K. Zworykin and E. D. Wilson—*John Wiley,* 331 p., $3. The second edition of a book that has proved useful to many in these days when photocells are gaining wider application.

Science News Letter, October 29, 1932

General Science

THE ADVANCEMENT OF SCIENCE, 1932—*British Association for the Advancement of Science,* 256 p., 3s. 6d. This issue of an annual volume contains the presidential addresses delivered before the B.A.A.S. meeting at York this year.

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Psychology

CHARACTER AND PERSONALITY—Edited by Robert Saudek—*Duke University Press,* $2 per year, 50c a copy. A quarterly whose editor is in London and associate editor at Duke University and which issues a special edition published in Germany under the title "Charakter." It is therefore called an international quarterly. Psychologists will welcome a new scientific journal devoted to this subject. Such names as McDougall, Saudek, Downey, and Jung, appearing in the table of contents of the first issue promise that the publication will hold great interest.

Science News Letter, October 29, 1932

Eugenics

WEEDS IN THE GARDEN OF MARRIAGE — George Pitt-Rivers — *Noel Douglas,* 85 p., 3s. 6d. A plea for a practical program of eugenic reform in England, which the author calls a "Dysgenic State," as well as elsewhere in this imperfect world.

Science News Letter, October 29, 1932

Paleontology

BEASTS OF THE TAR PITS—W. W. Robinson—*Macmillan,* 45 p., $1.75. Simply written for children, yet avoiding "baby talk," strikingly illustrated with charcoal sketches, this book tells in attractive fashion the story of the wonderful and terrible animals that were trapped in the La Brea asphalt pits in the days when saber-tooth tigers snarled at dire wolves over such prey as ground sloths and wild camels.

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Biology

THE TREMETODE PARASITES OF MARINE MAMMALS—E. W. Price—*Smithsonian Institution,* 68 p., 12 pl. Of interest to parasitologists and to biologists generally.

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Chemistry

PETROLEUM PRODUCTS AND LUBRICANTS—*American Society for Testing Materials,* 286 p., $1.25. A useful reprint from the proceedings of the Society.

Science News Letter, October 29, 1932

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